

REMARKS/ARGUMENTS

Applicants have carefully reviewed the Office Action dated May 2, 2006. Reconsideration of the Examiner's rejection of the claims is respectfully requested. A total of 24 claims remain in the case. These are original claims 1 through 24, which have not been amended for the reasons stated herein below.

The Invention

The invention pertains to a styrenic resin composition that comprises a rubber modified styrene maleic anhydride (SMA) copolymer and polybutene, articles made from the composition; and methods for preparing this composition. The importance of the invention is that polybutene is added to the rubber modified SMA copolymer in order to improve the properties of containers, which, in turn, are suitable for packaged foods heated in microwave ovens. Preferably, the polybutene is added to the SMA copolymer *in situ* and not simply blended together with the other components of the styrenic resin composition.

The inventors believe that the addition of the polybutene to the rubber modified SMA especially *in situ* enhances the properties of the rubber component in that it is believed that the polybutene gravitates toward and surrounds the rubber component and not the SMA component (Page 9, lines 24-32 to page 10, lines 1-9 of the specification).

Claim Rejection Under 35 U.S.C. 103(a)

In the Office Action dated May 2, 2006, the Examiner rejected claims 1-24 as not being patentable over Kim (US 6,930,150) in view of Wang et al (US 5,852,124). Kim teaches the modification of polyolefin resins with a styrene-maleic acid copolymer that may itself, be modified. The Examiner brings Applicants' attention to column 5(lines 15-36), which teaches the inclusion of polybutene, which at column 6 (lines 58-60) may be added to other polymers including at column 8(lines 31-60) styrene-maleic anhydride polymers, which may be functionalized.

The Examiner continues by stating that the Wang et al. reference shows the rubber modified styrene-maleic anhydride as recited and claimed in the subject patent application for modification of other thermoplastic resins as an impact modifier. The Examiner directs Applicants' attention to column 2(lines 23 et seq.), column 3 (lines 9-33) and column 8 (lines 40-65) for the use with other polymers, and states that the polymers listed therein contain many that are disclosed by Kim at column 9(lines 50 et seq.). As such, the use thereof in the polybutene composition would have been an obvious modification to an artisan at the time the invention was made. End-use applications and methods for producing the composition of the invention are also considered as being obvious or conventional.

Kim (US 6,930,150) pertains to a polymer blend composition comprising Component A having at least 5% by weight of anionic functional group, at least Component B free of such functional groups, and at least Component C which is a metal cation.

Column 5, lines 15-36 disclose mixtures of homopolymer, copolymer and terpolymer of (i) butane, (ii) unsaturated carboxylic acid including maleic acid or monoester of dicarboxylic acid including maleic anhydride, and (iii) acrylic ester. Applicants bring the Examiner's attention to the fact that maleic anhydride itself is not included as this invention specifically requires an anionic functional group. Column 6, lines 58-60 disclose blending more than one of any of components A, B, or C, including polymers listed in Column 8, lines 31-60.

Even though styrene maleic anhydride (S/MA) is mentioned in Column 8, line 53 as a suitable material for use as component A, the description of Component A on line 34 of Column 8 states that at least 5% by weight of Component A is an anionic functional group. Even though S/MA may be used as a starting material for Component A, in its final form, at least 5% by weight of this anhydride group must be converted into an anionic group. There is no such teaching in the invention. That is, the anhydride group of the SMA copolymer of the subject invention does not contain 5% by weight of an anionic group and does not need to contain 5% by weight of an anionic group.

Wang et al. (US 5,852,124) pertain to a rubber-modified styrenic resin composition, which has high falling impact strength, high gloss, high tensile strength and the product produced from this resin has little or no unpleasant odor. This is accomplished by controlling the residual styrenic monomers to a content of below 1500 ppm and the residual 4-vinyl cyclohexene below 150 ppm.

In column 2, lines 23 to 67 and column 3, lines 9-33, the polymer disclosed therein is a rubber modified styrene/ACN (acrylonitrile monomers) or methacrylate/maleic anhydride terpolymer. The rubber is a polybutadiene rubber. Acrylonitrile and methacrylate are essential parts of the polymer in order to attain high tensile strength. Column 8, lines 40-65 of this reference state that in order to improve the properties of the styrenic resin, suitable polymeric additives may be used. However, polybutene was not disclosed in this reference.

In the Examiner's rejection of the claims of the invention, he is looking at both the references to Kim and Wang, and saying that the polymers listed in Wang, et al. contain many that are disclosed by Kim at column 9, lines 50 et seq.), and as such, the use of polybutene would have been an obvious modification.

Applicants rebut the Examiner's position that the claims are obvious in view of the two references. First, the styrenic resin composition of the invention pertains to rubber modified styrene maleic anhydride copolymers. Whereas, Wang et al. pertains to rubber modified styrene/acrylonitrile or methacrylate/maleic anhydride terpolymers.

Second, there is no suggestion in Wang et al. to use polybutene to modify the styrenic composition. As such, Applicants will not permit such a combination of these references for this rejection, and submits that the Examiner is applying hindsight in his rejection of the claims.

In this context it is important to note the admonition that was provided by the Court of Customs and Patent Appeals decision in *In re Imperato*, 179 USPQ 730 wherein the Board of Appeals affirmation of an Examiner's rejection under Section 103 based on the combination of references was overturned. In so doing, the Board stated on page 732:

With regard to the principal rejection, we agree that combining the teaching of Schaefer with that of Johnson or Amberg would give the beneficial results observed by appellant. However, the mere fact that those disclosures can be combined does not make the combination obvious unless the art also contains something to suggest the desirability of the combination. We find no such suggestion in these references.

Guidance provided by this case would appear to be applicable in the present situation wherein any reasonable interpretation of the individual references would lead one skilled in the art in a direction away from Applicants' invention as there is nothing to teach or suggest the combination. Since there is no suggestion of incorporating polybutene in Wang et al., as taught in Kim into the styrene resin composition of Wang et al, Applicants' can only surmise that the Examiner is applying hindsight in his rejection of the claims with the references before him.

Third, in the Kim reference, Component A, which may be an anhydride group, in its final form, must contain at least 5% by weight of an anionic group. In the invention, the anhydride group does not contain 5% by weight of an anionic group.

Summary and Conclusion

The claimed invention is not taught, disclosed, or even suggested in the references when taken singly or in combination.

Applicants for the first time disclose and claim a styrenic resin composition comprised of a rubber modified styrene maleic anhydride copolymer and polybutene, which preferably, is added to the rubber modified styrene maleic anhydride copolymer in situ during the production of the copolymer, for improving the properties of any product produced from the composition.

Applicants authorize Deposit Account No. 501679 be debited in the amount of \$450 to cover the petition for a two month extension of time under 37 CFR 1.17(a) (2). This petition is enclosed. Authorization is also given to charge any additional fees that may be required or credit any overpayment to Deposit Account No. 501679.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

  
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